

## CLAIMS:

1. Travelling-wave amplifier comprising two transmission lines, at least two amplifiers, said amplifiers being coupled anti-parallel to said transmission lines.

2. Travelling-wave amplifier according to claim 1, wherein coupling means are provided for coupling said amplifiers to said transmission lines, respectively.

3. Travelling-wave amplifier according to claim 1, wherein said coupling of an input port of said amplifier to one of said transmission lines is spatial by set off from the coupling of an output port of said amplifier to the other of said transmission lines.

4. Travelling-wave amplifier according to claim 2, wherein said coupling means are electrical connections.

5. Travelling-wave amplifier according to claim 2, wherein said coupling means are directional coupling circuits.

6. Travelling-wave amplifier according to claim 1, wherein the phase of the output signal of said amplifiers is matched with the phase of the travelling-wave on the respective transmission line.

7. Travelling-wave amplifier according to claim 3, wherein said spatial offset provides said phase matching.

8. Travelling-wave amplifier according to claim 1, wherein the phase of said amplifiers provides said phase matching.

9. Travelling-wave amplifier according to claim 2, wherein said coupling means provide said phase matching.

10. Travelling-wave amplifier according to claim 1, wherein said amplifiers retrieve DC-bias voltage from said transmission lines.

11. Method for providing travelling-wave amplification, in particular with a  
5 travelling-wave amplifier according to claim 1, with two transmission lines and at least two amplifiers, where said travelling-waves at said transmission lines have a phase difference of  $180^\circ$ , where the output of a pair of said amplifiers is fed to said transmission lines anti-parallel such that the travelling-wave of a first transmission line is fed to a first amplifier, said first amplifier adds an amplified signal to the travelling-wave of said second  
10 transmission line and the travelling-wave of said second transmission line is fed to a second amplifier, said second amplifier adds an amplified signal to the travelling-wave of said first transmission line.

12. Use of travelling-wave amplifiers according to claim 1 or of a method  
15 according to claim 11 in optical systems, optical switch matrices, optical communication systems, RF wideband products, microwave communication, set-top boxes for satellite TV or satellite communication, anti-collision radar, wireless local loops, advanced IC processors such as GaAs and InP processes.